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1042 U.S. PTO

UREA CONDENSATE-SEWER SLUDGE PRODUCTS

This application is a continuation-in-part of serial No. 08/723,779 filed 08/30/96, now
patent No. 5,854,309, and is a continuation-in-part of serial No. 09/693,194, filed 10/23/2000.

FIELD

This invention concerns urea and urea condensate reacted with sewer sludge for use as fertilizer, to produce resins, as odor controlling and as fire retardant agent. The invention also concerns the preparation and use of nitrogen containing compound produced by reacting urea or urea condensates with the compounds in sewer sludge. The nitrogen containing compounds produced by reacting urea or urea condensates with sewer sludge and/or its composition is useful in the reduction of odor in the process of dehydrating sewer sludge for use as a fertilizer, also useful in production of resins such as formaldehyde-urea condensate-sewer sludge resins, as a flame retardant to stop house fires, grass and forest fires, to produce flame retarded water based plastic, flame retarded plastics, flame retardant polyurethane foam, etc, and fire retardant flammable organic materials by incorporating in or by spraying on the outside of materials.

BACKGROUND

Urea in the form of a solid compound has been used as a flame retardant agent in polyurethane foams as outline in U.S. Patent No. 4,385,131 (Fracalossi, et al.). Many patents use solid urea condensates, urea phosphates, urea borates and urea derivative as the flame retardant agent. Dried sewer sludge is used as a fertilizer but has a very low nitrogen content. The reaction of urea with sewer sludge, the use of urea to react with the sulfur containing compounds in sewer sludge and the use of aqueous or powdered nitrogen containing compound of urea condensates to